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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/056,388	01/24/2002	Yoshihiro Katsu	JP920010010US1	3893

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INTERNATIONAL BUSINESS MACHINES CORPORATION  
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EXAMINER

DI GRAZIO, JEANNE A

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 04/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/056,388	KATSU ET AL.	
	Examiner	Art Unit	
	Jeanne A. Di Grazio	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 20 January 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>020604</u> . | 6) <input type="checkbox"/> Other: _____  |

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## DETAILED ACTION

### *Claims*

Claims 1-4, 6-9, 13, and 14 are amended by Amendment of January 20, 2004. Claims 1, 7, and 13 are independent. No claims have been cancelled. Claims 1-20 remain pending.

### *Priority*

Priority to Japanese Patent Application No. 2001-024758 (Jan. 31, 2001) is claimed.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 5, 6, and 9-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takase et al. (US 5,276,600) in view of Zhao et al. (US 6,382,816 B1).

Per claims 1, 3, 5, 6, and 9-19: Takase discloses a curved reflector having a flexible substrate. The reflector according to the Takase invention can be used as a reflecting plate (lamp housing) for a fluorescent lamp in turn incorporated into a backlight source of a liquid crystal display panel (Col. 1, Lines 11-16).

Turning to Figure 1, Takase teaches a reflector (1a) that is curved for receiving a lamp, and a reflecting film (4) formed on the inner curvature of the reflector.

Takase teaches that a transparent protective layer can be formed on the side opposite to the light reflection layer:

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"In the reflector of this invention, the substrate can be provided with a transparent protective layer on the side opposite to the high reflection layer. By such a protective layer, the effects of external environmental factors on the surface hardness, light resistance, gas resistance and waterproofness of the reflector can be reduced further. Examples of materials usable for the formation of such a protective layer include organic materials, e.g., acrylic resins such as polymethyl methacrylate, polyacrylonitrile resin, polymethacrylonitrile resin, silicone resins such as a polymer available from ethyl silicate, polyester resins and fluorinated resins; and inorganic materials such as silicon oxide, zinc oxide and titanium oxide. In particular, lamination of a material capable of shielding light of wavelengths not longer than 400 nm, preferably 380 nm to 10% or less is preferred for the prevention of light deterioration (ultraviolet deterioration) of the silver-containing layer, which prevention is one of objects of this invention. The transparent protective layer is required to have such a thickness that it can exhibit protective effects without lowering the light reflecting ability and impairing the flexibility. The thickness may vary as needed depending on the material and application purpose." (Col. 4, Lines 63-68; Col. 5, Lines 1-21).

Takase furthermore instructs that the substrate film thickness should be at least 5 micrometers, the silver reflective layer is in the range of Angstroms, and the adhesive layer can range from thicknesses of 1-20 micrometers (preferred)(Col. 4).

Takase does not appear to explicitly specify a thickness of the transparent protective layer.

However, the Zhao reference teaches that a protective layer that protects a layer of silver inside of a lamp housing, preferably has:

"[T]he protective layer of silica, or other oxide, preferably has a thickness of between about 0.05 and about 0.4 micrometers, most preferably, around 0.05-0.14 micrometers. This is thick enough to protect the silver against oxidation during formation of the lamp and against subsequent degradation by atmospheric sulfides." (Col. 6, Lines 24-30).

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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takase in view of Zhao for the purpose of protecting the reflective layer against oxidation during formation of the lamp and against subsequent degradation by atmospheric sulfides.

Claims 2, 4, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takase et al. (US 5,276,600) in view of Zhao et al. (US 6,382,816 B1) and further in view of Deloy (US 6,336,728 B1).

Per claims 2, 4, 7, and 8: Takase does not appear to explicitly specify a lamp reflector with arm portions disposed along an emitting surface and back surface and light transmission regions of a specified thickness.

Deloy teaches a flat panel display guide that has leg sections. The leg portions, in part, allow for enhanced luminance uniformity and the reduction of dead space (Col. 4, Lines 22-25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takase in view of Deloy for enhanced luminance uniformity and the reduction of dead space.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takase et al. (US 5,276,600) in view of Zhao et al. (US 6,382,816 B1) and further in view of Simpson (US 6,399, 228 B1).

Per claim 20: Takase does not appear to explicitly specify the material of the reflection layer.

Simpson has a reflector of Ag, Al, and Pt (Col. 9, Lines 6-10 and ABS) for high reflectivity (Id.).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takase in view of Simpson for a highly reflective reflector.

Claims 1, 3, 5, 6, and 9-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takase et al. (US 5,276,600).

Per claims 1, 3, 5, 6, and 9-19: Takase discloses a curved reflector having a flexible substrate. The reflector according to the Takase invention can be used as a reflecting plate (lamp housing) for a fluorescent lamp in turn incorporated into a backlight source of a liquid crystal display panel (Col. 1, Lines 11-16).

Turning to Figure 1, Takase teaches a reflector (1a) that is curved for receiving a lamp, and a reflecting film (4) formed on the inner curvature of the reflector.

Takase teaches that a transparent protective layer can be formed on the side opposite to the light reflection layer:

"In the reflector of this invention, the substrate can be provided with a transparent protective layer on the side opposite to the high reflection layer. By such a protective layer, the effects of external environmental factors on the surface hardness, light resistance, gas resistance and waterproofness of the reflector can be reduced further. Examples of materials usable for the formation of such a protective layer include organic materials, e.g., acrylic resins such as polymethyl methacrylate, polyacrylonitrile resin, polymethacrylonitrile resin, silicone resins such as a polymer available from ethyl silicate, polyester resins and fluorinated resins; and inorganic materials such as silicon oxide, zinc oxide and titanium oxide. In particular, lamination of a material capable of shielding light of wavelengths not longer than 400 nm, preferably 380 nm to 10% or less is preferred for the prevention of light deterioration (ultraviolet deterioration) of the silver-containing layer, which prevention is one of objects of this invention. The transparent protective layer is required to have such a thickness that it can exhibit protective effects without lowering the light reflecting ability

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and impairing the flexibility. The thickness may vary as needed depending on the material and application purpose.” (Col. 4, Lines 63-68; Col. 5, Lines 1-21).

Takase furthermore instructs that the substrate film thickness should be at least 5 micrometers, the silver reflective layer is in the range of Angstroms, and the adhesive layer can range from thicknesses of 1-20 micrometers (preferred)(Col. 4).

Specifically, Takase teaches that, with respect to the flexible substrate, “the thinner the better in view of the cost reduction of the resulting reflector or the productivity upon formation of a reflection layer.” (Column 4, Lines 14-17).

Takase also explains that the preferred film thickness is at least 5 $\mu$ m (Id.).

Per Applicant’s enabling disclosure, “[t]his result (suppression of bright lines) can be achieved by setting the thickness of the protective layer to be less than 5 $\mu$ m.” (Specification, Page 7, Lines 24-26). Therefore, the film of Takase et al. being less than 5 $\mu$ m (the thinner the better) results in the claimed suppression of bright lines.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the transparent protective film thickness as thin as possible at least for cost reduction and productivity.

Claims 2, 4, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takase et al. (US 5,276,600) in view of Zhao et al. (US 6,382,816 B1) and further in view of Deloy (US 6,336,728 B1).

Per claims 2, 4, 7, and 8: Takase does not appear to explicitly specify a lamp reflector with arm portions disposed along an emitting surface and back surface and light transmission regions of a specified thickness.

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Takase teaches that, with respect to the flexible substrate, “the thinner the better in view of the cost reduction of the resulting reflector or the productivity upon formation of a reflection layer.” (Column 4, Lines 14-17).

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Per Applicant’s enabling disclosure, “[t]his result (suppression of bright lines) can be achieved by setting the thickness of the protective layer to be less than  $5\mu\text{m}$ .” (Specification, Page 7, Lines 24-26). Therefore, the film of Takase et al. being less than  $5\mu\text{m}$  (the thinner the better) results in the claimed suppression of bright lines.

Deloy teaches a flat panel display guide that has leg sections. The leg portions, in part, allow for enhanced luminance uniformity and the reduction of dead space (Col. 4, Lines 22-25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takase in view of Deloy for enhanced luminance uniformity and the reduction of dead space.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takase et al. (US 5,276,600) in view of Zhao et al. (US 6,382,816 B1) and further in view of Simpson (US 6,399, 228 B1).

Per claim 20: Takase does not appear to explicitly specify the material of the reflection layer.

Simpson has a reflector of Ag, Al, and Pt (Col. 9, Lines 6-10 and ABS) for high reflectivity (Id.).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takase in view of Simpson for a highly reflective reflector.



***Response to Arguments***

Applicant's arguments filed in paper of January 20, 2004 have been fully considered but they are not persuasive.

Applicant's Arguments:

(1) Applicant argues that "Takase et al. fails to specify a thickness of the transparent protective film. In particular, Takase et al. fails to teach or suggest minimizing the thickness of a light transmission region defined between an arm portion and a surface of the light guide plate, so as to render inconspicuous bright lines on the ..." (Amendment of Jan. 20, 2004 at page 7).

(2) Applicant argues that "Zhao et al. fails to teach or suggest, among other things, a light transmission region between an arm of a reflector body and a light guide plate having a thickness sufficiently small so that periodic bright lines on the liquid crystal display are at an inconspicuous intensity level. Therefore, one of ordinary skill would not be motivated to combine the teachings of Takase et al. with Zhao et al. to arrive at the present invention." (Amendment of Jan. 20, 2004 at page 7).

(3) Applicant argues that "Deloy et al. fails to teach or suggest a side backlight unit on which a light transmission region defined between arms of the lamp reflector and the guide light plate has a thickness that is sufficiently small so that periodic bright lines are inconspicuous on the display, and one of ordinary skill would not be motivated to combine the teachings of Takase et al. with Zhao et al. and Deloy to arrive at the present invention." (Amendment of Jan. 20, 2004 at page 8).

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(4) Applicant argues that “Simpson fails to overcome the deficiencies of Takase et al., Zhao et al., or Deloy ... and therefore the combined teachings ... do not render obvious the invention of claims 1, 7, and 13.” (Amendment of Jan. 20, 2004 at page 8).

Examiner’s Response to Applicant’s Arguments:

Upon careful review of the Takase et al. patent (US 5,276,600), with reference to Figures 3 and 5 for example, the flexible substrate (5) is actually the transparent protective film. Figure 5 illustrates a curved backlight reflector wherein the flexible substrate (8, 4’, 1’) is curved around a light guide plate (9). Arm portions extend from the flexible substrate (8, 4’, 1’) and may define light transmission regions therebetween. Takase furthermore goes on to teach that, with respect to the flexible substrate, “the thinner the better in view of the cost reduction of the resulting reflector or the productivity upon formation of a reflection layer.” (Column 4, Lines 14-17).

Takase also explains that the preferred film thickness is at least 5 $\mu$ m (Id.).

Per Applicant’s enabling disclosure, “[t]his result (suppression of bright lines) can be achieved by setting the thickness of the protective layer to be less than 5 $\mu$ m.” (Specification, Page 7, Lines 24-26). Therefore, the film of Takase et al. being less than 5 $\mu$ m (the thinner the better) results in the claimed suppression of bright lines.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeanne A. Di Grazio whose telephone number is (571)272-2289.

The examiner can normally be reached on M-F.

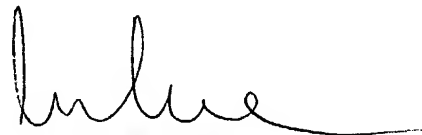
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached on (571)272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeanne Andrea Di Grazio

Patent Examiner  
Art Unit 2871

Robert Kim, SPE

A handwritten signature in black ink, appearing to read 'DUNG T. NGUYEN', with a long horizontal flourish extending to the right.

**DUNG T. NGUYEN**  
**PRIMARY EXAMINER**